Claims

What is claimed is:

1. A rotary cathode device, comprising:
a conducting member disposed within a rotary cathode for coupling electrical current from a power supply to a brush assembly, the conducting member being made of an electrically conductive material; and
an electromagnetic field shield disposed between the conducting member and an outer surface of the rotary cathode.

2. A rotary cathode device of claim 1 wherein the conducting member comprises a coolant conduit.

3. A rotary cathode device of claim 1 the electromagnetic field shield forms at least part of a drive shaft portion of the rotary cathode.

4. A rotary cathode device of claim 1 wherein the electromagnetic field shield comprises electromagnetic field-permeable material.

5. A rotary cathode device of claim 1 further comprising a drive shaft portion of the rotary cathode, the electromagnetic field shield being disposed between the conducting member and the drive shaft portion.

6. A rotary cathode device of claim 5 wherein the drive shaft portion has a bore passing there through such that the drive shaft portion includes an interior surface adjacent the bore, the electromagnetic field shield being adjacent to at least a portion of the interior surface of the drive shaft portion.

7. A rotary cathode device of claim 1 further comprising a drive shaft portion of the rotary cathode which forms at least a portion of the outer surface of the rotary cathode, the electromagnetic field shield being adjacent to at least a portion of an outer surface of the drive shaft portion.

8. A high-power ion sputtering magnetron having a rotary cathode device of claim 1.

9. A rotary cathode device connectable to a power supply of electrical current, said rotary cathode device comprising:

a coolant conduit disposed within the rotary cathode device made of an electrically conductive material for connecting the electrical current from the power supply to the rotary cathode; and

a drive shaft portion made of a ferrous material for absorbing the electromagnetic field to reduce heat damage to parts adjacent to the coolant conduit that are susceptible to inductive magnetic heating.

10. A high-power ion sputtering magnetron, comprising:

a rotary cathode disposed upon the magnetron device, the rotary cathode comprising a conducting member disposed within the rotary cathode for coupling electrical current from a power supply to a brush assembly, the conducting member being made of an electrically conductive material, the rotary cathode further comprising an electromagnetic field shield disposed between the conducting member and an outer surface of the rotary cathode.

11. A magnetron device of claim 10 wherein the conducting member comprises a coolant conduit.

12. A magnetron device of claim 10 wherein the electromagnetic field shield forms at least part of a drive shaft portion of the rotary cathode rotatably disposed upon the magnetron device.

13. A magnetron device of claim 10 wherein the electromagnetic field shield comprises electromagnetic field-permeable material.

14. A magnetron device of claim 10 wherein the rotary cathode further comprises a drive shaft portion of the rotary cathode, the electromagnetic field shield being disposed between the conducting member and the drive shaft portion.

15. A magnetron device of claim 14 wherein the rotary cathode drive shaft portion has a bore passing there through such that the drive shaft portion includes an interior surface adjacent the bore, the electromagnetic field shield being adjacent to at least a portion of the interior surface of the drive shaft portion.

16. A magnetron device of claim 10 wherein the rotary cathode further comprises a drive shaft portion of the rotary cathode which forms at least a portion of the outer surface of the rotary cathode, the electromagnetic field shield being adjacent to at least a portion of an outer surface of the drive shaft portion.

17. A high-power ion sputtering magnetron connectable to an electrical power supply, said magnetron device comprising:

a rotary cathode rotatably mounted upon the magnetron device, said rotary cathode comprising a conducting member disposed within the rotary cathode, said conducting member being made of an electrically conductive material for connecting the electrical current from the power supply to the rotary cathode; and

a drive shaft portion rotatably mounted to the magnetron device, said drive shaft portion being made of a ferrous material for absorbing the electromagnetic field to reduce heat damage to parts adjacent to the conducting member that are susceptible to inductive magnetic heating.